(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date 5 June 2003 (05.06.2003)

PCT

(10) International Publication Number WO 2003/045560 A3

(51) International Patent Classification⁷: G01N 1/31

B65D 23/00,

(21) International Application Number:

PCT/US2002/037552

(22) International Filing Date:

22 November 2002 (22.11.2002)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

09/994,458 26 No 10/299,290 19 No

26 November 2001 (26.11.2001) U 19 November 2002 (19.11.2002) U

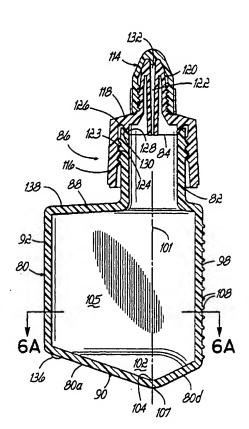
- (71) Applicant: LAB VISION CORPORATION [US/US]; 47790 Westinghouse Drive, Fremont, CA 94539 (US).
- (72) Inventors: TSEUNG, Ken, K.; 4018 Allyson Terrace, Fremont, CA 94538 (US). RHETT, Norman, K.; 544

Santander, San Ramon, CA 94583 (US). TAKAYAMA, Glenn, K.; 240 Heather Place, Danville, CA 94526 (US). WONG, Wai, Bun; 3669 Dowitcher Terrace, Fremont, CA 94555 (US). YUEN, Delia, P.; 1052 West Hill Court, Cupertino, CA 95014 (US).

- (74) Agents: FREI, Donald, F. et al.; Wood, Herron & Evans, L.L.P., 2700 Carew Tower, Cincinnati, OH 45202 (US).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW).

[Continued on next page]

(54) Title: AUTOMATED TISSUE STAINING SYSTEM AND REAGENT CONTAINER



(57) Abstract: An automated staining system (10) and a reagent container (50) designed for use with the automated staining apparatus (10). The reagent container (50) includes a reagent containment section (80) capable of containing a volume of a reagent. The reagent containment section (80) includes an upper wall (88) and a base wall (90) that are spaced apart along an axis. The base wall (90) includes a well (102) having a nadir (104) that is aligned axially with an access opening in the upper wall (88) so that a reagent probe (38) entering the opening parallel to said axis will travel toward the nadir (104). In another aspect of the invention, the reagent container (50) may include a two-dimensional data element (140) containing reagent information. The staining apparatus (10) may include one removable drawer for holding reagent containers (50) and another removable drawer holding slides (12).

WO 2003/045560 A3



Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

- with international search report
- (88) Date of publication of the international search report: 18 March 2004

International Application No

PCT/US 02/37552 A. CLASSIFICATION OF SUBJECT MATTER IPC 7 B65D23/00 G01N G01N1/31 According to International Patent Classification (IPC) or to both national classification and IPC B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 B65D G01N Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal C. DOCUMENTS CONSIDERED TO BE RELEVANT Category ° Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. χ US 5 670 117 A (ERB HERMANN ET AL) 1-7 23 September 1997 (1997-09-23) column 1, line 39 - line 43 Υ 8-14 column 1, line 62 - line 67 column 3, line 2 - line 10; figures 2A,3 Υ US 5 839 091 A (CORL MARK V ET AL) 8-14 17 November 1998 (1998-11-17) cited in the application column 3, line 48 - line 49; figure 1B column 12, line 54 -column 13, line 57; figure 24 GB 2 216 259 A (MICROVOL LTD) 4 October 1989 (1989-10-04) Α 4-6, 11 - 13page 5, paragraph 2 - paragraph 3 Further documents are listed in the continuation of box C. Patent family members are listed in annex. Special categories of cited documents: later document published after the International filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the 'A' document defining the general state of the art which is not considered to be of particular relevance invention "E" earlier document but published on or after the international "X" document of particular relevance; the claimed invention filing date cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such docu-'O' document referring to an oral disclosure, use, exhibition or other means ments, such combination being obvious to a person skilled in the art. *P* document published prior to the international filing date but later than the priority date claimed *&* document member of the same patent family Date of the actual completion of the international search Date of mailing of the international search report 1 0. 10. 2003 12 September 2003

Authorized officer

Hocquet, A

Name and mailing address of the ISA

Fax: (+31-70) 340-3016

European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,

		PCT/US 02/37552
C.(Continu	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 264 182 A (SAKAGAMI TOSHIO) 23 November 1993 (1993-11-23) column 5, line 22 - line 29; figure 2	1,2
X	DE 94 00 010 U (POHL HJALTE ;HABER HORST DIPL ING FH (DE); SCHNEIDER JUERGEN (DE)) 24 February 1994 (1994-02-24) figure 1	1,2
Α	US 5 523 047 A (CORBY KENNETH D ET AL) 4 June 1996 (1996-06-04) figures 1-3	1,7
Α	EP 0 987 181 A (IVOCLAR AG) 22 March 2000 (2000-03-22) paragraph '0002! paragraph '0026!	1-7
A	US 5 417 121 A (HVIDTFELDT KRISTIAN J ET AL) 23 May 1995 (1995-05-23) column 9, line 15 - line 28; figure 3	1,2
А	US 5 654 200 A (COPELAND KEITH G ET AL) 5 August 1997 (1997-08-05) column 9, line 47 - line 54; figure 14 column 12, line 27 - line 38; figure 15	8
Y	WO 01 51909 A (LAB VISION CORP) 19 July 2001 (2001-07-19) cited in the application	15-19, 26 - 28
Y X	page 12, line 8 - line 20 page 14, line 20 - line 21; claims 11-16 page 9, line 5 - line 7 page 12, line 1 - line 7	29–33 34–37
Y	US 5 854 075 A (LEVINE MARSHALL S ET AL) 29 December 1998 (1998-12-29) column 9, line 66 -column 10, line 5	15-19, 26-28
Υ	US 5 793 969 A (KAMENTSKY LOUIS A ET AL) 11 August 1998 (1998-08-11) column 6, line 16 - line 27	29-33
Α	US 5 573 727 A (KEEFE RAYMOND A) 12 November 1996 (1996-11-12) column 2, line 30 - line 53; figure 1	20
A	US 5 482 839 A (MINAKAWA HIDETAKA ET AL) 9 January 1996 (1996-01-09) column 6, line 6 - line 11 column 6, line 37 - line 47 column 3, line 60 -column 4, line 14; figures 1-5	20-25
	-/	

		PCT/US 02	2/37552				
C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT							
ategory *	Citation of document, with indication, where appropriate, of the relevant passages		Relevant to claim No.				
A	US 3 912 456 A (YOUNG ROBERT R) 14 October 1975 (1975-10-14) column 3, line 43 - line 45; figure 1 column 7, line 3 - line 8; figure 3		21				
A	WO 00 63696 A (QUEST DIAGNOSTICS INVEST INC) 26 October 2000 (2000-10-26) page 4, line 21 -page 5, line 11; claims 2,3 page 8, line 3 - line 14; figure 4 page 13, line 8 - line 12	,	38,42-45				
A	EP 0 510 686 A (HITACHI LTD) 28 October 1992 (1992-10-28) column 9, line 56 - line 58; figure 4		15				
	·	•					

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-14

Reagent container and staining apparatus comprising a plurality of said reagent containers

2. Claims: 15-19, 26-28, 38-44

Staining apparatus with reagent containers carrying two-dimensional data storage elements and a robotic delivery system including a probe and an optical reader; method of staining including the reading of said two-dimensional data storage elements.

3. Claims: 20-25

staining apparatus with a drawer

4. Claims: 29-37

methods of operating a staining apparatus with a remote computer system $% \left(1\right) =\left(1\right) \left(1\right) \left($

5. Claims: 45-53

staining method using a slide holding a tissue specimen and a two-dimensional data element and using an optical reader to decode the data element and to image the tissue specimen

International Application No PCT/US 02/37552

INTERNATIONAL SEARCH REPORT

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)	
This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:	
1. Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:	
Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:	
3. Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).	
Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)	
This international Searching Authority found multiple inventions in this international application, as follows:	-
see additional sheet	
1. X As all required additional search fees were timely paid by the applicant, this international Search Report covers all searchable claims.	
2. As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.	
3. As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:	
4. No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:	
Remark on Protest The additional search fees were accompanied by the applicant's protest. X No protest accompanied the payment of additional search fees.	į

Information on patent family members

				,	02/3/352
Patent document cited in search report	Publication date		Patent family member(s)		Publication date
US 5670117	23-09-1997	DE AT DE EP JP JP	9411517 205748 59509606 0694334 2651369 8058828	T D1 A1 B2	17-08-1995 15-10-2001 25-10-2001 31-01-1996 10-09-1997 05-03-1996
US 5839091 /	17-11-1998	US 2 US	2002116132 6349264		22-08-2002 19-02-2002
GB 2216259	04-10-1989	NONE			
US 5264182 <i>F</i>	23-11-1993	JP JP DE US	2269971 2269972 4011584 5213761	A A1	05-11-1990 05-11-1990 18-10-1990 25-05-1993
DE 9400010 L	24-02-1994	DE	9400010	U1	24-02-1994
US 5523047 A	04-06-1996	US DE GB	5360133 19500043 2285616	A1	01-11-1994 20-07-1995 19-07-1995
EP 0987181 A	22-03-2000	DE EP JP 2	19842464 0987181 2000085737	A2	23-03-2000 22-03-2000 28-03-2000
US 5417121 A	23-05-1995	AT DE DE DE WO DK EP EP JP US	132270 209361 69024494 69033868 69033868 9100520 678746 0478683 0678746 2708275 5309775	T D1 D1 T2 A1 T3 A1 A1 B2	15-01-1996 15-12-2001 08-02-1996 03-01-2002 27-06-2002 10-01-1991 21-05-2002 08-04-1992 25-10-1995 04-02-1998 10-05-1994
US 5654200 A	05-08-1997	US 2 US US 2	5595707 2002072122 2002114733 6352861 2002001849 2003022391 6472217 5650327 5654199 2077452 69117052 69117052 517835 0517835 2085471 5504627 3186764 9113335	A1 A1 B1 A1 B1 A A A1 D1 T2 T3 A1 T3 T B2	21-01-1997 13-06-2002 22-08-2002 05-03-2002 03-01-2002 30-01-2003 29-10-2002 22-07-1997 05-08-1997 03-09-1991 21-03-1996 14-11-1996 10-06-1996 16-12-1992 01-06-1996 15-07-1993 11-07-2001 05-09-1991

Information on patent family members

Palatin family						
CA 2396805 A1 19-07-2001 CN 1404573 T 19-03-2003 EP 1247084 A1 09-10-2002 JP 2003519791 T 24-06-2003 WO 0151909 A1 19-07-2001 US 5854075 A 29-12-1998 US 5676910 A 14-10-1997 AU 5927996 A 30-12-1996 EP 0834065 A1 19-12-1996 EP 0834065 A1 19-12-1996 EP 0834065 A1 19-12-1996 US 5793969 A 11-08-1998 US 5587833 A 24-12-1996 AU 1702397 A 01-08-1999 WO 974148 A1 19-12-1996 AU 1702397 A 01-08-1997 CA 2166464 A1 17-07-1997 CA 2166464 A1 19-01-1995 EP 0707715 A1 24-04-1996 IL 110257 A 28-09-2000 JP 9503268 T 15-04-1997 WO 9748999 A1 24-12-1997 WO 9748999 A1 24-12-1997 US 5790308 A 04-08-1998 US 5573727 A 12-11-1996 AU 671276 B2 22-08-1996 AU 4051493 A 13-12-1993 WO 97323732 A1 25-11-1993 EP 0640209 A1 01-03-1995 EP 0640209 A1 01-03-1996 US 5482839 A 09-01-1996 US 5290708 A 01-03-1994 AU 4169793 A 14-10-1995 EP 0640209 A1 01-03-1995 EP 0640200 A						
CA 2396805 A1 19-07-2001 CN 1404573 T 19-03-2003 EP 1247084 A1 09-10-2002 JP 2003519791 T 24-06-2003 WO 0151909 A1 19-07-2001 US 5854075 A 29-12-1998 US 5676910 A 14-10-1997 AU 5927996 A 30-12-1996 EP 0834065 A1 19-12-1996 EP 0834065 A1 19-12-1996 EP 0834065 A1 19-12-1996 US 5793969 A 11-08-1998 US 5587833 A 24-12-1996 AU 1702397 A 01-08-1999 WO 974148 A1 19-12-1996 AU 1702397 A 01-08-1997 CA 2166464 A1 17-07-1997 CA 2166464 A1 19-01-1995 EP 0707715 A1 24-04-1996 IL 110257 A 28-09-2000 JP 9503268 T 15-04-1997 WO 9748999 A1 24-12-1997 WO 9748999 A1 24-12-1997 US 5790308 A 04-08-1998 US 5573727 A 12-11-1996 AU 671276 B2 22-08-1996 AU 4051493 A 13-12-1993 WO 97323732 A1 25-11-1993 EP 0640209 A1 01-03-1995 EP 0640209 A1 01-03-1996 US 5482839 A 09-01-1996 US 5290708 A 01-03-1994 AU 4169793 A 14-10-1995 EP 0640209 A1 01-03-1995 EP 0640200 A	WO 0151909	Δ	19-07-2001	ΔΗ	2634501 A	24-07-2001
CN 1404573 T 19-03-22003	WU 0131303	^	19 07 2001			
EP						
JP 2003519791 T 24-06-2003						
US 5854075 A 29-12-1998 US 5676910 A 14-10-1997 AU 5927996 A 30-12-1996 EP 0834065 AI 08-04-1998 JP 11506826 T 15-06-1999 W0 9641148 AI 19-12-1996 W0 9641148 AI 19-12-1996 W0 974148 AI 19-12-1996 W0 9725678 AI 17-07-1997 AU 1702397 A 01-08-1997 W0 9725678 AI 17-07-1997 CA 2166464 AI 19-01-1995 EP 0707715 AI 24-04-1996 IL 110257 A 28-09-2000 JP 9503868 T 15-04-1997 W0 974899 AI 19-01-1995 W0 97489 AI 19-01-1995 W0 97489 AI 19-01-1995 W0 97489 AI 19-01-1995 W0 97489 AI 19-01-1995 W0						
US 5854075 A 29-12-1998 US 5676910 A 14-10-1997 AU 5927996 A 30-12-1996 CA 2220049 A1 19-12-1996 EP 0834065 A1 18-012-1996 US 5793969 A 11-08-1998 US 5587833 A 24-12-1996 AU 1702397 A 10-08-1997 WO 9725678 A1 17-07-1997 CA 2166464 A1 19-01-1995 EP 0707715 A1 24-04-1996 IL 110257 A 28-09-2000 JP 9503868 T 15-04-1997 WO 9502204 A1 19-01-1995 WO 9502204 A1 19-01-1995 WO 9748999 A1 24-12-1997 US 579308 A 04-08-1998 US 5573727 A 12-11-1996 AU 671276 B2 22-08-1996 AU 4051493 A 13-12-1997 US 5790308 A 04-08-1998 US 5482839 A 09-01-1996 US 5290708 A 01-03-1995 JP 8500434 T 16-01-1996 US 5482839 A 09-01-1996 US 600264 A1 19-01-1995 US 5482839 A 09-01-1996 US 600264 A1 19-01-1995 US 5482839 A 09-01-1996 US 600264 A1 19-01-1996 US 5482839 A 09-01-1996 US 600264 A1 19-01-1996 US 5482839 A 09-01-1996 US 600264 A1 10-03-1994 AU 6606814 B2 06-07-1995 AU 640762 B2 02-09-1993 AU 640762 B2 02-09-1993 AU 640762 B2 02-09-1993 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 CA 2039321 A2 02-10-1991 CA 2039321 A2 02-10-1991 CA 2039321 A2 02-10-1991 CA 2039321 A2 02-10-1991 CA						
AU 5927996 A 30-12-1996 CA 2220049 A1 19-12-1996 EP 0834065 A1 08-04-1998 JP 11506826 T 15-06-1999 WO 9641148 A1 19-12-1996 US 5793969 A 11-08-1998 US 5587833 A 24-12-1996 AU 1702397 A 01-08-1997 WO 9725678 A1 17-07-1997 CA 2166464 A1 19-01-1995 EP 07077715 A1 24-04-1996 IL 110257 A 28-09-2000 JP 9503868 T 15-04-1997 WO 9502204 A1 19-01-1995 WO 9502204 A1 19-01-1995 WO 9748999 A1 24-12-1997 US 5602674 A 11-02-1997 US 579308 A 04-08-1998 US 5573727 A 12-11-1996 AU 671276 B2 22-08-1996 AU 4051493 A 13-12-1993 WO 9323732 A1 25-11-1993 EP 0640209 A1 01-03-1995 JP 8500434 T 16-01-1996 US 5482839 A 09-01-1996 US 520708 A 01-03-1995 AU 4169793 A 14-10-1995 AU 660814 B2 06-07-1995 AU 405793 A 14-10-1993 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 CA 2039322 A1 01-10-1991 CA 2039322 A1 01-10-1991 EP 0449321 A2 02-10-1991 EP 049321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 4218775 A 10-08-1992 JP 2946831 B2 06-09-1999 JP 42188775 A 10-08-1992 JP 2946831 B2 06-09-1999 JP 42186775 A 10-08-1992 JP 2946831 B2 06-09-1999 JP 42186775 A 10-08-1992 JP 2946831 B2 17-12-1997				WO	0151909 A1	19-07-2001
CA 2220049 A1 19-12-1996 EP 0834065 A1 08-04-1998 JP 11506826 T 15-06-1999 W0 9641148 A1 19-12-1996 US 5793969 A 11-08-1998 US 5587833 A 24-12-1996 AU 1702397 A 01-08-1997 CA 2166464 A1 19-01-1995 EP 0707715 A1 24-04-1996 IL 110257 A 28-09-2000 JP 9503868 T 15-04-1997 W0 972899 A1 24-12-1997 W0 9748999 A1 24-12-1997 US 5602674 A 11-02-1997 US 5790308 A 04-08-1998 W0 9323732 A1 25-11-1993 W0 9323732 A1 25-11-1993 JP 8500434 T 16-01-1996 US 5482839 A 09-01-1996 US 5290708 A 01-03-1994 AU 4051493 A 13-12-1993 AU 4069793 A 14-10-1996 US 5482839 AU 4069793 A 14-10-1993 AU 406762 B2 02-09-1993 AU 40762 B2 02-09-1993 AU 60762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 D1 12-11-1999 DE 69130303 D1 12-11-1998 DE 69130303 D1 12-11-1999 DE 69130303 D1 12-11-1998 DE 69130303 D1 12-11-1999 DE 69130303 D	US 5854075	Α	29-12-1998			
CP						
US 5793969 A 11-08-1998 US 5587833 A 24-12-1996 US 5793969 A 11-08-1998 US 5587833 A 24-12-1996 US 6793969 A 11-08-1998 US 5587833 A 24-12-1996 US 793969 A 11-08-1998 US 5587833 A 24-12-1997 US 79364 A 11-08-1998 US 5587833 A 24-12-1997 US 2166464 A1 19-01-1995 EP 0707715 A1 24-04-1996 IL 110257 A 28-09-2000 JP 9503868 T 15-04-1997 US 5602674 A 11-02-1997 US 5790308 A 14-10-1995 US 5790308 A 11-02-1997 US 5790308 A 11-02-1997 US 5790308 A 11-02-1997 US 5790308 A 13-12-1993 AU 4051493 A 13-12-1993 EP 0640209 A1 01-03-1995 JP 8500434 T 16-01-1996 US 5482839 A 09-01-1996 US 5290708 A 01-03-1994 AU 660814 B2 06-07-1995 AU 660814 B2 06-07-1995 AU 640762 B2 02-09-1993 AU 640762 B2 02-09-1993 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997				CA	2220049 A1	19-12-1996
US 5793969 A 11-08-1998 US 5587833 A 24-12-1996 AU 1702397 A 01-08-1997 WO 9725678 A1 17-07-1997 CA 2166464 A1 19-01-1995 EP 0707715 A1 24-04-1996 IL 110257 A 28-09-2000 JP 9503868 T 15-04-1997 WO 9748999 A1 12-01-1997 US 5602674 A 11-02-1997 US 5602674 A 11-02-1997 US 5790308 A 04-08-1998 US 5573727 A 12-11-1996 AU 671276 B2 22-08-1996 AU 4051493 A 13-12-1993 WO 9323732 A1 25-11-1993 EP 0640209 A1 01-03-1995 EP 0640209 A1 01-03-1995 EP 0640209 A1 01-03-1995 AU 60814 B2 06-07-1995 AU 4169793 A 14-10-1993 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 CA 2039322 A1				EP	0834065 A1	08-04-1998
US 5793969 A 11-08-1998 US 5587833 A 24-12-1996 AU 1702397 A 01-08-1997 WO 9725678 A1 17-07-1997 CA 2166464 A1 19-01-1995 EP 0707715 A1 24-04-1996 IL 110257 A 28-09-2000 JP 9503868 T 15-04-1997 WO 9748999 A1 12-01-1997 US 5602674 A 11-02-1997 US 5602674 A 11-02-1997 US 5790308 A 04-08-1998 US 5573727 A 12-11-1996 AU 671276 B2 22-08-1996 AU 4051493 A 13-12-1993 WO 9323732 A1 25-11-1993 EP 0640209 A1 01-03-1995 EP 0640209 A1 01-03-1995 EP 0640209 A1 01-03-1995 AU 660814 B2 06-07-1995 AU 4169793 A 14-10-1993 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 CA 2039322 A				JP	11506826 T	15-06-1999
AU 1702397 A 01-08-1997 W0 9725678 A1 17-07-1997 CA 2166464 A1 19-01-1995 EP 0707715 A1 24-04-1996 IL 110257 A 28-09-2000 JP 9503868 T 15-04-1997 W0 9748999 A1 24-12-1997 US 5602674 A 11-02-1997 US 5602674 A 11-02-1997 US 5790308 A 04-08-1998 US 5573727 A 12-11-1996 AU 671276 B2 22-08-1996 AU 4051493 A 13-12-1993 W0 9323732 A1 25-11-1993 EP 0640209 A1 01-03-1995 JP 8500434 T 16-01-1996 US 5482839 A 09-01-1996 US 5290708 A 01-03-1994 AU 660814 B2 06-07-1995 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 AU 7397791 A 03-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 3912456 A 14-10-1975 NONE W0 0063696 A 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997						
AU 1702397 A 01-08-1997 W0 9725678 A1 17-07-1997 CA 2166464 A1 19-01-1995 EP 0707715 A1 24-04-1996 IL 110257 A 28-09-2000 JP 9503868 T 15-04-1997 W0 9748999 A1 24-12-1997 US 5602674 A 11-02-1997 US 5602674 A 11-02-1997 US 5790308 A 04-08-1998 US 5573727 A 12-11-1996 AU 671276 B2 22-08-1996 AU 4051493 A 13-12-1993 W0 9323732 A1 25-11-1993 EP 0640209 A1 01-03-1995 JP 8500434 T 16-01-1996 US 5482839 A 09-01-1996 US 5290708 A 01-03-1994 AU 660814 B2 06-07-1995 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 AU 7397791 A 03-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 3912456 A 14-10-1975 NONE W0 0063696 A 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997	IIS 5793969	Δ	11-08-1998	IIS	5587833 A	. 24-12-1996
WO 9725678 A1 17-07-1997 CA 2166464 A1 19-01-1995 EP 0707715 A1 24-04-1996 IL 110257 A 28-09-2000 JP 9503868 T 15-04-1997 WO 9502204 A1 19-01-1995 WO 9748999 A1 24-12-1997 US 5602674 A 11-02-1997 US 5602674 A 11-02-1997 US 5790308 A 04-08-1998 US 5790308 A 04-08-1999 US 5790308 A 04-08-1999 US 5790308 A 04-08-1999 US 09323732 A1 25-11-1993 EP 0640209 A1 01-03-1995 US 09323732 A1 25-11-1993 EP 0640209 A1 01-03-1995 US 060814 B2 06-07-1995 AU 4169793 A 14-10-1993 AU 640762 B2 02-09-1993 AU 640762 B2 02-09-1993 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 D1 12-11-1999 DE 69130303 D1 12-11-1999 DE 69130303 D1 12-11-1999 DE 6913030	03 3/33303	^	11 00 1550			
US 5573727 A 12-11-1996 AU 671276 B2 22-08-1996 AU 4051493 A 13-12-1993 EP 0640209 A1 01-03-1995 BP 0640209 A1 01-03-1995 AU 660814 B2 06-07-1995 AU 660814 B2 06-07-1995 AU 660814 B2 06-07-1995 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 D1 12-11-1998 DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 5040122 A 19-02-1993 DF 5040122 A 19-02-1993 DF 5040122 A 19-02-1993 DF 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997						
US 5573727 A 12-11-1996 AU 671276 B2 22-08-1996 AU 4051493 A 13-12-1993 WO 9323732 AI 25-11-1993 EP 0640209 AI 16-01-1996 AU 4169793 A 14-10-1995 AU 4169793 A 14-10-1995 AU 4169793 A 14-10-1995 AU 4169793 A 14-10-1995 AU 4169793 A 14-10-1993 AU 660814 B2 06-07-1995 AU 4169793 A 14-10-1993 AU 660814 B2 06-07-1995 AU 660814 B2 06-07-1995 AU 640762 B2 02-09-1993 AU 640762 B2 02-1993 AU 640762 B2 02-						
TL						
US 5573727 A 12-11-1996 AU 671276 B2 22-08-1996 AU 4051493 A 13-12-1993 WO 9323732 A1 25-11-1993 EP 0640209 A1 11-02-1997 US 5482839 A 09-01-1996 US 5290708 A 01-03-1996 US 5482839 A 09-01-1996 US 5290708 A 01-03-1995 AU 4169793 A 14-10-1995 AU 4169793 A 14-10-1995 AU 4169793 A 14-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 US 518895 A 27-10-1992 US 5158895 A 27-10-1992 US 5158895 A 27-10-1992 US 5158895 A 27-10-1992 US 3912456 A 14-10-1975 NONE WO 0063696 A 28-10-1992 UP 2692413 B2 17-12-1997 EP 0510686 A 28-10-1992 UP 2692413 B2 17-12-1997 EP 0510686 A 28-10-1992 UP 2692413 B2 17-12-1997						
WO 9502204 A1 19-01-1995 WO 9748999 A1 24-12-1997 US 5602674 A 11-02-1997 US 5602674 A 11-02-1998 US 5790308 A 04-08-1998 AU 4051493 A 13-12-1993 WO 9323732 A1 25-11-1993 EP 0640209 A1 01-03-1995 AU 600814 B2 06-07-1996 AU 660814 B2 06-07-1995 AU 640762 B2 02-09-1993 AU 640762 B2 02-09-1993 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 JP 2946831 B2 06-09-1999 JP 29		-				
WO 9748999 A1 24-12-1997 US 5602674 A 11-02-1997 US 5602674 A 11-02-1997 US 5790308 A 04-08-1998						
US 5573727 A 12-11-1996 AU 671276 B2 22-08-1996 AU 4051493 A 13-12-1993 WO 9323732 A1 25-11-1993 FP 0640209 A1 01-03-1995 AU 660814 B2 06-07-1996 AU 640762 B2 02-09-1993 AU 640762 B2 02-09-1993 AU 640762 B2 02-09-1993 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 D1 12-11-1998 DE 69130303 D1 12-11-1998 DE 69130303 D1 22-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 2946831 B2 06-09-1999 JP 2946831 B2 06-09-1999 JP 2946831 B2 06-09-1999 JP 5040122 A 19-08-1992 JP 5040122 A 19-08-1992 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE						
US 5790308 A 04-08-1998 US 5573727 A 12-11-1996 AU 671276 B2 22-08-1996 AU 4051493 A 13-12-1993 WO 9323732 A1 25-11-1993 EP 0640209 A1 01-03-1995 JP 8500434 T 16-01-1996 US 5482839 A 09-01-1996 US 5290708 A 01-03-1994 AU 660814 B2 06-07-1995 AU 4169793 A 14-10-1993 AU 640762 B2 02-09-1993 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 JP 4218775 A 10-08-1992 JP 2946831 B2 06-09-1999 JP 2046831 B2 17-12-1997 B2040850 A 2046804 B2040850				WO	9748999 A1	24-12-1997
US 5573727 A 12-11-1996 AU 671276 B2 22-08-1996 AU 4051493 A 13-12-1993 WO 9323732 A1 25-11-1993 EP 0640209 A1 01-03-1995 JP 8500434 T 16-01-1996 US 5482839 A 09-01-1996 US 5290708 A 01-03-1994 AU 660814 B2 06-07-1995 AU 4169793 A 14-10-1993 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 2946831 B2 06-09-1999 JP 2946831 B2 06-09-1999 JP 2946831 B2 06-09-1999 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997				US	5602674 A	11-02-1997
AU 4051493 A 13-12-1993 W0 9323732 A1 25-11-1995 EP 0640209 A1 01-03-1995 JP 8500434 T 16-01-1996 US 5482839 A 09-01-1996 US 5290708 A 01-03-1994 AU 660814 B2 06-07-1995 AU 4169793 A 14-10-1993 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE W0 0063696 A 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997						
AU 4051493 A 13-12-1993 W0 9323732 A1 25-11-1995 EP 0640209 A1 01-03-1995 JP 8500434 T 16-01-1996 US 5482839 A 09-01-1996 US 5290708 A 01-03-1994 AU 660814 B2 06-07-1995 AU 4169793 A 14-10-1993 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE W0 0063696 A 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997	IIS 5573727	Δ	12-11-1996		671276 B2	22-08-1996
WO 9323732 A1 25-11-1993 EP 0640209 A1 01-03-1995 JP 8500434 T 16-01-1996 US 5482839 A 09-01-1996 US 5290708 A 01-03-1994 AU 660814 B2 06-07-1995 AU 4169793 A 14-10-1993 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1999 JP 4230859 A 19-08-1999 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997	00 00/0/2/	•	12 11 1330			
EP						
US 5482839 A 09-01-1996 US 5290708 A 01-03-1994 AU 660814 B2 06-07-1995 AU 4169793 A 14-10-1993 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 2946831 B2 06-09-1999 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997						
AU 660814 B2 06-07-1995 AU 4169793 A 14-10-1993 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 4230859 A 19-08-1992 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997						
AU 660814 B2 06-07-1995 AU 4169793 A 14-10-1993 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 4230859 A 19-08-1992 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997	IIC E402020		00-01-1006	110	F200709 A	01_03_1004
AU 4169793 A 14-10-1993 AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997	03 3402039	Α	09-01-1990			
AU 640762 B2 02-09-1993 AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 4230859 A 19-08-1992 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997						
AU 7397791 A 03-10-1991 CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 4230859 A 19-08-1992 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997						
CA 2039322 A1 01-10-1991 DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997						
DE 69130303 D1 12-11-1998 DE 69130303 T2 20-05-1999 EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 4230859 A 19-08-1992 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997						
DE 69130303 T2 20-05-1999 EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997						
EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997						
EP 0449321 A2 02-10-1991 ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997			•		69130303 T2	20-05-1999
ES 2124691 T3 16-02-1999 JP 3010509 B2 21-02-2000 JP 4218775 A 10-08-1992 KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997					0449321 A2	02-10-1991
US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 28-10-1992 JP 2692413 B2 17-12-1997						
US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 28-10-1992 JP 2692413 B2 17-12-1997						
KR 9514745 B1 14-12-1995 US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997						
US 5158895 A 27-10-1992 JP 2946831 B2 06-09-1999 JP 4230859 A 19-08-1992 JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997			•			
US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 28-10-1992 JP 2692413 B2 17-12-1997						
US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997						
JP 5040122 A 19-02-1993 US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997						
US 3912456 A 14-10-1975 NONE WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997						
WO 0063696 A 26-10-2000 AU 4485800 A 02-11-2000 EP 1212617 A1 12-06-2002 WO 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997				JP <u>.</u>	5040122 A	19-02-1993
EP 1212617 A1 12-06-2002 W0 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997	US 3912456	A	14-10-1975	NONE		
W0 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997	WO 0063696	Α	26-10-2000			02-11-2000
W0 0063696 A1 26-10-2000 EP 0510686 A 28-10-1992 JP 2692413 B2 17-12-1997				EP	1212617 A1	12-06-2002
				WO	0063696 A1	26-10-2000
	EP 0510686	A	28-10-1992	JP	2692413 B2	17-12-1997
		••		JP	4326063 A	16-11-1992

Information on patent family members

Patent document cited in search report	Publication date		Patent family member(s)	Publication date
EP 0510686 A		DE DE EP	69220714 D1 69220714 T2 0510686 A2	14-08-1997 06-11-1997 28-10-1992

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



. 1900 MARIO NA DILIKO DINI BUMA BUMA DI NA DI NA

(43) International Publication Date 5 June 2003 (05.06.2003)

PCT

(10) International Publication Number WO 2003/045560 A3

(51) International Patent Classification⁷: G01N 1/31

B65D 23/00,

(21) International Application Number:

PCT/US2002/037552

(22) International Filing Date:

22 November 2002 (22.11.2002)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

09/994,458 10/299,290 26 November 2001 (26.11.2001) US 19 November 2002 (19.11.2002) US

(71) Applicant: LAB VISION CORPORATION [US/US]; 47790 Westinghouse Drive, Fremont, CA 94539 (US).

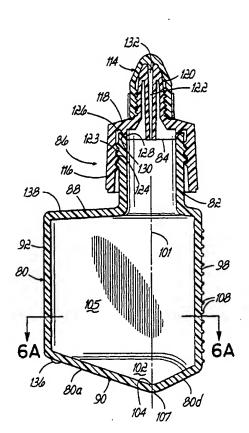
(72) Inventors: TSEUNG, Ken, K.; 4018 Allyson Terrace, Fremont, CA 94538 (US). RHETT, Norman, K.; 544

Santander, San Ramon, CA 94583 (US). TAKAYAMA, Glenn, K.; 240 Heather Place, Danville, CA 94526 (US). WONG, Wai, Bun; 3669 Dowitcher Terrace, Fremont, CA 94555 (US). YUEN, Delia, P.; 1052 West Hill Court, Cupertino, CA 95014 (US).

- (74) Agents: FREI, Donald, F. et al.; Wood, Herron & Evans, L.L.P., 2700 Carew Tower, Cincinnati, OH 45202 (US).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM; ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),

[Continued on next page]

(54) Title: AUTOMATED TISSUE STAINING SYSTEM AND REAGENT CONTAINER



(57) Abstract: An automated staining system (10) and a reagent container (50) designed for use with the automated staining apparatus (10). The reagent container (50) includes a reagent containment section (80) capable of containing a volume of a reagent. The reagent containment section (80) includes an upper wall (88) and a base wall (90) that are spaced apart along an axis. The base wall (90) includes a well (102) having a nadir (104) that is aligned axially with an access opening in the upper wall (88) so that a reagent probe (38) entering the opening parallel to said axis will travel toward the nadir (104). In another aspect of the invention, the reagent container (50) may include a two-dimensional data element (140) containing reagent information. The staining apparatus (10) may include one removable drawer for holding reagent containers (50) and another removable drawer holding slides (12).

Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

Published:

- with international search report
- (88) Date of publication of the international search report: 18 March 2004

International Application No PCT/US 02/37552

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 B65D23/00 G01M G01N1/31 According to International Patent Classification (IPC) or to both national classification and IPC B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 B65D G01N Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal C. DOCUMENTS CONSIDERED TO BE RELEVANT Category ° Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No. X US 5 670 117 A (ERB HERMANN ET AL) 1-7 23 September 1997 (1997-09-23) column 1, line 39 - line 43 column 1, line 62 - line 67 column 3, line 2 - line 10; figures 2A,3 8-14 Υ US 5 839 091 A (CORL MARK V ET AL) 8-14 17 November 1998 (1998-11-17) cited in the application column 3, line 48 - line 49; figure 1B column 12, line 54 -column 13, line 57; figure 24 Α GB 2 216 259 A (MICROVOL LTD) 4-6, 4 October 1989 (1989-10-04) 11 - 13page 5, paragraph 2 - paragraph 3 X Further documents are listed in the continuation of box C. Patent family members are listed in annex. Special categories of cited documents: *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the *A* document defining the general state of the art which is not considered to be of particular relevance invention "E" earlier document but published on or after the International "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such docu-O' document referring to an oral disclosure, use, exhibition or ments, such combination being obvious to a person skilled document published prior to the international filing date but later than the priority date claimed "&" document member of the same patent family Date of the actual completion of the international search Date of mailing of the international search report 1 0. 10. 2003 12 September 2003 Name and mailing address of the ISA Authorized officer European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl. Hocquet, A Fax: (+31-70) 340-3016

		PC1/US 02/3/552
	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	
Category •	Citation of document, with Indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 264 182 A (SAKAGAMI TOSHIO) 23 November 1993 (1993-11-23) column 5, line 22 - line 29; figure 2	1,2
X	DE 94 00 010 U (POHL HJALTE ;HABER HORST DIPL ING FH (DE); SCHNEIDER JUERGEN (DE)) 24 February 1994 (1994-02-24) figure 1	1,2
A	US 5 523 047 A (CORBY KENNETH D ET AL) 4 June 1996 (1996-06-04) figures 1-3	1,7 .
A	EP 0 987 181 A (IVOCLAR AG) 22 March 2000 (2000-03-22) paragraph '0002! paragraph '0026!	1-7
А	US 5 417 121 A (HVIDTFELDT KRISTIAN J ET AL) 23 May 1995 (1995-05-23) column 9, line 15 - line 28; figure 3	1,2
A	US 5 654 200 A (COPELAND KEITH G ET AL) 5 August 1997 (1997-08-05) column 9, line 47 - line 54; figure 14 column 12, line 27 - line 38; figure 15	
Y	WO 01 51909 A (LAB VISION CORP) 19 July 2001 (2001-07-19) cited in the application	15-19, 26 - 28
Y X	page 12, line 8 - line 20 page 14, line 20 - line 21; claims 11-16 page 9, line 5 - line 7 page 12, line 1 - line 7	29-33 34-37
Υ .	US 5 854 075 A (LEVINE MARSHALL S ET AL) 29 December 1998 (1998-12-29) column 9, line 66 -column 10, line 5	15-19, 26-28
Υ	US 5 793 969 A (KAMENTSKY LOUIS A ET AL) 11 August 1998 (1998-08-11) column 6, line 16 - line 27	29-33
А	US 5 573 727 A (KEEFE RAYMOND A) 12 November 1996 (1996-11-12) column 2, line 30 - line 53; figure 1	20
А	US 5 482 839 A (MINAKAWA HIDETAKA ET AL) 9 January 1996 (1996-01-09) column 6, line 6 - line 11 column 6, line 37 - line 47 column 3, line 60 -column 4, line 14; figures 1-5	20-25
	-/	

Continu	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	PCT/US 02	
legory °		·	Relevant to claim No.
\	US 3 912 456 A (YOUNG ROBERT R) 14 October 1975 (1975-10-14)		21
	column 3, line 43 - line 45; figure 1 column 7, line 3 - line 8; figure 3		
ı	WO 00 63696 A (QUEST DIAGNOSTICS INVEST INC) 26 October 2000 (2000-10-26) page 4, line 21 -page 5, line 11; claims		38,42-45
	2,3 page 8, line 3 - line 14; figure 4 page 13, line 8 - line 12		
Ą	EP 0 510 686 A (HITACHI LTD) 28 October 1992 (1992-10-28) column 9, line 56 - line 58; figure 4		15
			,

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. Claims: 1-14

Reagent container and staining apparatus comprising a plurality of said reagent containers

2. Claims: 15-19, 26-28, 38-44

Staining apparatus with reagent containers carrying two-dimensional data storage elements and a robotic delivery system including a probe and an optical reader; method of staining including the reading of said two-dimensional data storage elements.

3. Claims: 20-25

staining apparatus with a drawer

4. Claims: 29-37

methods of operating a staining apparatus with a remote computer system

5. Claims: 45-53

staining method using a slide holding a tissue specimen and a two-dimensional data element and using an optical reader to decode the data element and to image the tissue specimen

International Application No PCT/US 02/37552

INTERNATIONAL SEARCH REPORT

Box I	Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)
This Inte	ernational Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:
1.	Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
2.	Claims Nos.: because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3.	Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).
Box II	Observations where unity of invention is lacking (Continuation of item 2 of first sheet)
This Into	ernational Searching Authority found multiple inventions in this international application, as follows:
	see additional sheet
1. χ	As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2.	As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.	As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4.	No required additional search fees were timely paid by the applicant. Consequently, this international Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
Remar	The additional search fees were accompanied by the applicant's protest. X No protest accompanied the payment of additional search fees.

information on patent family members

						02/3/352
Patent document cited in search report		Publication date		Patent family member(s)		Publication date
US 5670117	А	23-09-1997	DE AT DE EP JP JP	9411517 205748 59509606 0694334 2651369 8058828	T D1 A1 B2	17-08-1995 15-10-2001 25-10-2001 31-01-1996 10-09-1997 05-03-1996
US 5839091	A	17-11-1998	US US	2002116132 6349264		22-08-2002 19-02-2002
GB 2216259	A	04-10-1989	NONE			
US 5264182	A	23-11-1993	JP JP DE US	2269971 2269972 4011584 5213761	A A1	05-11-1990 05-11-1990 18-10-1990 25-05-1993
DE 9400010	U	24-02-1994	DE	9400010	U1	24-02-1994
US 5523047	A	04-06-1996	US DE GB	5360133 19500043 2285616	A1	01-11-1994 20-07-1995 19-07-1995
EP 0987181	Α	22-03-2000	DE EP JP	19842464 0987181 2000085737	A2 .	23-03-2000 22-03-2000 28-03-2000
US 5417121	Α	23-05-1995	AT AT DE DE WO DK EP EP JP	132270 209361 69024494 69033868 69033868 9100520 678746 0478683 0678746 2708275 5309775	T D1 D1 T2 A1 T3 A1 A1 B2	15-01-1996 15-12-2001 08-02-1996 03-01-2002 27-06-2002 10-01-1991 21-05-2002 08-04-1992 25-10-1995 04-02-1998 10-05-1994
US 5654200	А	05-08-1997	US US US US US US US DE DE DE JP WO	5595707 2002072122 2002114733 6352861 2002001849 2003022391 6472217 5650327 5654199 2077452 69117052 69117052 517835 0517835 2085471 5504627 3186764 9113335	A1 A1 A1 A1 A1 A A1 D1 T2 T3 A1 T3 T B2	21-01-1997 13-06-2002 22-08-2002 05-03-2002 03-01-2002 30-01-2003 29-10-2002 22-07-1997 05-08-1997 03-09-1991 21-03-1996 14-11-1996 10-06-1996 16-12-1992 01-06-1996 15-07-1993 11-07-2001 05-09-1991

Information on patent family members

					FC1/U3	02/3/552
Patent document cited in search report		Publication date		Patent family member(s)		Publication date
WO 0151909	A	19-07-2001	AU CA CN EP JP WO	2634501 2396805 1404573 1247084 2003519791 0151909	5 A1 3 T 1 A1 1 T	24-07-2001 19-07-2001 19-03-2003 09-10-2002 24-06-2003 19-07-2001
US 5854075	A	29-12-1998	US AU CA EP JP WO	5676910 5927996 2220049 0834065 11506826 9641148	5 A 9 A1 5 A1 5 T	14-10-1997 30-12-1996 19-12-1996 08-04-1998 15-06-1999 19-12-1996
US 5793969		11-08-1998	US AU WO CA EP IL JP WO WO US	5587833 1702397 9725678 2166464 0707715 110257 9503868 9502204 9748999 5602674 5790308	A A1 A1 A1 A A A A A A A A A A A A A A	24-12-1996 01-08-1997 17-07-1997 19-01-1995 24-04-1996 28-09-2000 15-04-1997 19-01-1995 24-12-1997 11-02-1997 04-08-1998
US 5573727	Α	12-11-1996	AU AU WO EP JP	671276 4051493 9323732 0640209 8500434	3 A 2 A1 3 A1	22-08-1996 13-12-1993 25-11-1993 01-03-1995 16-01-1996
US 5482839	A	09-01-1996	US AU AU CA DE DE EP JP KR US JP JP	5290708 660814 4169793 640762 7397791 2039322 69130303 69130303 0449321 2124691 3010509 4218778 9514748 5158898 2946831 4230859 5040122	B B2 B A B B2 A A 1 B D1 B T2 A A2 T T3 B B2 B A B B1 B A	01-03-1994 06-07-1995 14-10-1993 02-09-1993 03-10-1991 01-10-1991 12-11-1998 20-05-1999 02-10-1991 16-02-1999 21-02-2000 10-08-1992 14-12-1995 27-10-1992 06-09-1999 19-08-1992
US 3912456	Α	14-10-1975	NONE			
WO 0063696	Α	26-10-2000	AU EP WO	4485800 1212617 0063696	' A1	02-11-2000 12-06-2002 26-10-2000
EP 0510686	A	28-10-1992	JP JP	2692413 4326063		17-12-1997 16-11-1992

information on patent family members

Patent document cited in search report	Publication date		Patent family member(s)	Publication date
EP 0510686	A	DE DE EP	69220714 D1 69220714 T2 0510686 A2	14-08-1997 06-11-1997 28-10-1992